

Applicant : Shunpei Yamazaki et al.
Serial No. : 10/753,524
Filed : January 9, 2004
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Attorney's Docket No.: 07977-
0218003 / US3531/3615D1D1

Amendments to the Drawings:

The attached replacement sheet of drawings includes changes to FIGS. 17C and 17D and replaces the original sheet including FIGS. 17C and 17D.

FIGS. 17C and 17D have been designated as --Prior Art--.

Attachments following last page of this Amendment:

Replacement Sheet (1 pages)
Annotated Sheet Showing Changes (1 pages)

REMARKS

Claims 21-23, 25, 42-64 and 68-70 are pending with claims 21, 47 and 56 being independent. Claims 21, 25, 42, 47, 50, 51, 56, 59 and 60 have been amended. Support for the amendments may be found at least in FIGS. 17A, 17B and the related description in the specification. FIG. 17C of the specification illustrates a conventional crystalline silicon film. By contrast, FIG. 17A shows, and claim 21 recites, that in FIG. 17A "atoms constituting the different crystals at the grain boundary correspond to each other respectively or have dangling bonds neutralized by hydrogen or halogen elements." No new matter has been presented.

Drawing Objection

FIGS. 17C and 17D have been objected to as it is alleged that only what is old is illustrated and should be designated as --Prior Art--. FIGS. 17C and 17D have been designated as --Prior Art--, and therefore the objection has been overcome.

Specification Objection

The specification has been objected to for allegedly failing to provide adequate written support for the claimed invention and for failing to provide enablement regarding the concept of "continuously connected" lattices having "different directions." Claims 21, 47 and 56 have been amended, and the phrase "wherein directions of said lattices are different from each other" has been deleted from these claims. These amendments are believed to fully address the rejections. Accordingly, applicant requests that these rejections be withdrawn.

35 U.S.C. 112 - Claims 21-23, 25, 42-64 and 68-70

Claims 21-23, 25, 42-64 and 68-70 have been rejected under 35 U.S.C. 112, first paragraph as allegedly failing to comply with the written description requirement. Claims 21, 47, and 56 have been amended to eliminate the language to which the Examiner objected. These amendments are believed to fully address the rejections. Accordingly, applicant requests that these rejections be withdrawn.

35 U.S.C. 102(e) - Claims 21, 42, 43, 47, 51 and 52

Claims 21, 42, 43, 47, 51 and 52 have been rejected under 35 U.S.C. 102(e) as being unpatentable over Iwasaki (JP 08-288515 A) (with family member U.S. Patent No. 5,759,879 serving as a translation) or in an alternative rejection, by the prior art submitted by applicant in the specification. Applicant requests reconsideration and withdrawal of this rejection because neither Iwasaki nor the identified prior art in FIG. 17C in the specification discloses or properly suggests all of the features of independent claims 21 and 47. For example, Iwasaki and FIG. 17C of the specification fail to disclose or properly suggest that “atoms constituting the different crystals at the grain boundary correspond to each other respectively or have dangling bonds neutralized by hydrogen or halogen elements” as recited in independent claims 21 and 47.

Iwasaki discloses a method for forming a polycrystalline silicon film and a method for fabricating a thin-film transistor (TFT), where a polycrystalline silicon film is formed in which the positions of grain boundaries are controlled and the orientation of each crystal grain is uniform, thereby forming a polycrystalline silicon film on an insulating substrate where the grain boundaries do not exist or hardly exist in a current path of the TFT (Iwasaki: Abstract, Col. 1:7-20; Col. 6:30-38, Cols. 7-12; Examples 1 and 2, FIGS. 2-4). Iwasaki fails to disclose that “atoms constituting the different crystals at the grain boundary correspond to each other respectively or have dangling bonds neutralized by hydrogen or halogen elements” as recited in independent claim 21. Iwasaki is silent on these features.

As further explained in the specification, **“the crystal silicon film made of the unique crystal structure body . . . has the connective structure quite different from the conventional crystalline silicon film**, so that the silicon film has a feature that although it has the crystal grain boundaries, they do not become the recombination centers of carriers” (Specification: page 16, lines 17-22, emphasis added.) Hence, these features have already been distinguished from FIG. 17C in the specification. FIG. 17C of the specification does not disclose or properly suggest the above features of claim 21.

For at least these reasons, neither Iwasaki nor FIG. 17C of the specification describes or suggests all of the features of independent claim 21, and the rejection to claim 21 and dependent claims 42 and 43 should be withdrawn.

Similarly, claim 47 recites the “atoms constituting the different crystals at the grain boundary correspond to each other respectively or have dangling bonds neutralized by hydrogen or halogen elements,” and the rejection to claim 47 and dependent claims 51 and 52 should be withdrawn for reasons similar to those reasons presented above.

35 U.S.C. 103(a) - Claims 22 and 48

Claims 22 and 48, which depend from claims 21 and 47, have been rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki in view of Erhart (U.S. Patent No. 5,572,211). Applicant requests reconsideration and withdrawal of this rejection because Erhart, which is cited as allegedly teaching capacitors and thin film transistors in an active matrix display in a personal computer, does not remedy the failure of Iwasaki to describe or suggest all of the features of claims 21 and 47.

35 U.S.C. 103(a) - Claims 23, 25, 46, 49, 50 and 55

Claims 23, 25, 46, 49, 50 and 55 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki in view of den Boer (U.S. Patent No. 5,539,219). Applicant requests reconsideration and withdrawal of this rejection because den Boer, which is cited for allegedly teaching a pixel electrode, an opposite electrode, a liquid crystal between the electrodes, and a limitation on the channel length, does not remedy the failure of Iwasaki to describe or suggest all of the features of claims 21 and 47.

35 U.S.C. 103(a) - Claims 44, 45, 53 and 54

Claims 44, 45, 53 and 54 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki in view of Kobayashi (U.S. Patent No. 3,925,803). Applicant requests reconsideration and withdrawal of this rejection because Kobayashi, which is cited for allegedly

teaching rod-shaped silicon crystals in the TFT that are flattened at the top of the crystals, does not remedy the failure of Iwasaki to describe or suggest all of the features of claims 21 and 47.

35 U.S.C. 103(a) – Claims 56, 60 and 61

Claims 56, 60 and 61 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki in view of Inoue (U.S. Patent No. 6,153,893). Applicant requests reconsideration and withdrawal of the rejection because Inoue, which is cited for allegedly teaching a manufacturing method for a lightly doped drain (LDD) structure for preventing pixel leakage, does not remedy the failure of Iwasaki to describe or suggest all of the features of claim 56.

35 U.S.C. 103(a) – Claim 57

Claim 57 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki in view of Inoue and Erhart. Applicant requests reconsideration and withdrawal of this rejection because Erhart, which is cited as allegedly teaching capacitors and thin film transistors in an active matrix display in a personal computer, does not remedy the failure of Iwasaki and Inoue to describe or suggest all of the features of claim 56.

35 U.S.C. 103(a) – Claims 58, 59 and 64

Claims 58, 59 and 64 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki in view of Inoue and den Boer. Applicant requests reconsideration and withdrawal of this rejection because den Boer, which is cited for allegedly teaching a pixel electrode, an opposite electrode, a liquid crystal between the electrodes, and a limitation on the channel length, does not remedy the failure of Iwasaki and Inoue to describe or suggest all of the features of claim 56.

35 U.S.C. 103(a) – Claims 62 and 63

Claims 62 and 63 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki in view of Inoue and Kobayashi. Applicant requests reconsideration and withdrawal of

this rejection because Kobayashi, which is cited for allegedly teaching rod-shaped silicon crystals in the TFT that are flattened at the top of the crystals, does not remedy the failure of Iwasaki and Inoue to describe or suggest all of the features of claim 56.

35 U.S.C. 103(a) – Claims 68-70

Claims 68-70, which depend from claims 21, 47, and 56, have been rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki in view of Tran (U.S. Patent No. 5,534,445). Applicant requests reconsideration and withdrawal of this rejection because Tran, which is cited for allegedly teaching a silicon wafer, does not remedy the failure of Iwasaki to describe or suggest all of the features of claims 21, 47 and 56.

Conclusion

It is believed that all of the pending issues have been addressed. However, the absence of a reply to a specific rejection, objection, issue, or comment, including the Office Action's characterizations of the art, does not signify agreement with or concession of that rejection, issue, or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment or cancellation of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment or cancellation. Applicant reserves the right to prosecute the rejected claims in further prosecution of this or related applications.

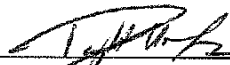
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Respectfully submitted,

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